

COUNTERING

Nuclear
and
Radiological

TERRORISM

A Report of The National Academies

Robert J. Budnitz

Lawrence Livermore National Laboratory

Panel On Countering Nuclear And Radiological Terrorism

William Happer, Princeton University (Chair)

Harold M. Agnew, LANL (retired)

Michael R. Anastasio, LLNL

Robert J. Budnitz, Future Resources Associates, Inc.
(now at LLNL)

Richard L. Garwin, Council on Foreign Relations

Roger L. Hagengruber, SNL

Glenn F. Knoll, University of Michigan

George W. Ullrich, DOD

Nuclear and Radiological Threats

Panel report addresses vulnerabilities, potential consequences, and effective responses to terrorist attacks involving:

- Stolen state-owned nuclear weapons or weapons components.
- Improvised nuclear devices (INDs) fabricated from special nuclear material (SNM).
- Attacks on nuclear reactors or spent nuclear fuel (SNF) or attacks involving radiological dispersion devices (RDDs).

Principal Conclusions (1)

- Stolen NUCLEAR WEAPONS and INDs:
 - Weapons: Generally well protected
 - INDs: Limiting factor is availability of SNM
 - Attack could be catastrophic
 - High potential for surprise
- Attacks on NUCLEAR POWER PLANTS
 - Over 100 potential targets in United States
 - Means are readily available for attack
 - Attack could potentially have severe consequences if sufficiently large, depending on design and location of specific safety equipment

Conclusions (2)

- Attacks on SNF (STORAGE/TRANSPORT)
Potential targets at every reactor site
Means are readily available for attack
Attack would have low consequences (?)
- RDDs (Dirty Bombs)
Usable materials are readily available
Attack would likely result in low casualties
But potential for panic/disruption is high

High-Priority S&T Recommendations

- Designate a lead federal agency for nuclear and radiological counter-terrorism R&D.
- Complete assessments of nuclear power plant vulnerabilities to airliner attacks as soon as possible and undertake follow-on work to identify vulnerabilities on a plant-by-plant basis.
- Provide R&D support for improving the technological capabilities of SNM detection systems, especially for detecting HEU.
- Undertake a focused/coordinated near-term effort to evaluate and improve the efficacy of SNM detection systems that could be deployed at strategic choke points for homeland defense.

High-Priority Policy Recommendations (1)

- Increase the urgency and pace of discussions with states possessing nuclear weapons and SNM with the goal of identifying and implementing more effective safeguards.
- Undertake an internal evaluation of the Materials Protection, Control, and Accounting (MPC&A) Program and consider ways to accelerate progress in safeguarding nuclear weapons and SNM, especially to counter potential insider threats.
- Increase the priority and pace of cooperative efforts with Russia to safeguard its HEU by blending down this material as soon as possible.

High-Priority Policy Recommendations (2)

- Tighten regulations for obtaining and possessing radiological sources that could be used in terrorist attacks (i.e., large sources containing long-lived isotopes). Encourage substitution of non-radioactive sources when economically feasible.
- Update the Federal Radiological Emergency Response Plan, or to develop a separate plan, to respond to nuclear and radiological terrorist attacks.
- Designate a technically credible spokesperson at the national level to provide accurate and usable information on public health/safety risks and appropriate response actions in the aftermath of a nuclear or radiological attack.